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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/807,902 | 04/19/2001 | Kenichi Arimura | 50212-211 | 7482 |

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EXAMINER

BUEKER, RICHARD R

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1763

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DATE MAILED: 05/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,902

Applicant(s)

ARIMURA ET AL.

Examiner

Richard Bueker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 3 and 16, the phrase "said depression" lacks proper antecedent basis, because the claims from which claims 3 and 16 depend recite plural depressions. The use of the word "depressions" in the claims remains rejected for the reasons stated in the previous office action. Applicants have argued that the use of this word does not cause a lack of clarity of the claimed subject matter. It is noted however, that in claim 1, lines 14 and 15, the phrase "a bottom portion of each of said depressions" is not completely clear. Applicants' Fig. 7 illustrates depressions 32, and it is unclear whether the claimed bottom portion is intended to refer to the bottom of depressions 32 as actually illustrated in Fig. 7, or to their top portions as illustrated in Fig. 7, because they are to be considered inverted depressions. The rejection based on the use of this word would be removed if the above noted phrase in claim 1 were clarified, such as by indicating whether the claimed bottom portion is the portion closest to the top or the bottom of the susceptor.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application

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being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7 and 9-20 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Goodman (2002/0043337). Goodman (see Figs. 1, 2a, 2b and 8, for example, and also paragraphs 125-144) discloses a semiconductor production apparatus having a susceptor having recesses of an elongated form in the lower surface of the susceptor. The susceptor is supported by a main shaft having radially extending arms, wherein the arms have protrusions as claimed that engage the recesses. The recesses have portions, both at their tops (paragraph 127 of Goodman) and their bottoms, which extend parallel to the susceptor surfaces. The arrangement allows movement of the susceptor in a radial direction relative to the protrusions. Goodman does not specifically state that the main shaft is positioned coaxial with a center of the susceptor, but such appears to be inherent in Goodman's apparatus, or at least would have been obvious from Goodman's apparatus.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodman taken in view of Nulman (5,098,198). Nulman discloses a low mass

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susceptor similar to that of Goodman, and Nulman (col. 1, lines 55-59) teaches that a silicon carbide coated graphite susceptor can be used as an alternative to a silicon carbide susceptor. It would have been prima facie obvious to one skilled in the art to substitute a silicon carbide coated graphite susceptor for the silicon carbide susceptor used in Goodman's apparatus, because Nulman teaches that a silicon carbide coated graphite susceptor can be used successfully in a semiconductor processing apparatus.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodman taken in view of deBoer (5,427,620), who discloses a semiconductor processing apparatus similar to that of Goodman, and teaches (col. 7, lines 8-15) the use of a support shaft made of fused quartz, which is silica glass. It would have been obvious to one skilled in the art to use a fused quartz support shaft in Goodman's apparatus, because deBoer teaches that a transparent quartz support shaft desirably transmits radiant heat.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goodman. The limitations of claim 16 are prima facie obvious in view of Goodman's teaching that a susceptor expands outwardly during heating. See paragraph 127 of Goodman. It would have been prima facie obvious to one skilled in the art to locate the pins at the outer portions of the recesses to provide room for the expected thermal expansion.

Claims 14, 15, 17, 18 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Perlov (5,421,893). Perlov (Figs. 2a and 2c) discloses a semiconductor processing apparatus including a

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susceptor having a plurality of pockets (80) and cavities (78, 82) formed in its lower surface, and a main support shaft having a plurality of arms radially extending from an upper end of the main support shaft. Each arm has a quartz pin (protrusion) extending upward that is engaged in an associated pocket or cavity. Perlov teaches (col. 2, lines 7-10) that susceptors are conventionally constructed of materials with a higher thermal expansion rate than the quartz support pins used by Perlov. One of the cavities has an elongated form extending radially. Perlov (paragraph bridging cols. 4 and 5) teaches that the orientation of the susceptor is provided by the pin in the elongated cavity in combination with a center pin. Perlov does not specifically state that the pins can slide along the pockets 80 and cavity 82 only in a substantially radial direction of the susceptor, but such appears inherent in Perlov's apparatus in view of the constraints placed on the susceptor's movement by the center pin and the pin that is engaged in the elongated cavity.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perlov taken in view of Goodman (2002/0043337). The limitations of claim 16 are prima facie obvious in view of Goodman's teaching that a susceptor expands outwardly during heating. See paragraph 127 of Goodman. It would have been prima facie obvious to one skilled in the art to locate the pins of Perlov at the outer portions of the cavities to provide room for the expected thermal expansion.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perlov. While Perlov describes round pockets 80 for his susceptor support pins, other shapes

would have been prima facie obvious to one skilled in the art as long as they avoided abrasion as desired by Perlov (col. 5, lines 1-4).

Applicants have asked why some of the citations of the IDS filed Sept. 17, 2001 (paper no. 4) were lined through. The reason is that the lined through citations appeared to be duplicates of the citations contained in the IDS filed April 19, 2001 (filed with paper no. 3). All of the citations listed on the April 19, 2001 IDS were considered and initialed. It isn't clear from applicants' response whether they received their initialed copy of the April 19, 2001 IDS as intended. On further review, however, it can be seen that the Sept. 17, 2001 IDS did contain more information regarding these citations, because it also listed the English abstracts of the Japanese references, and therefore should have been initialed. As requested by applicants, an initialed copy of applicants' resubmission of the Sept. 17, 2001 IDS is attached to this communication.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wengert (6,325,858) contains teachings similar to that of Goodman.


This office action has not been made final, in view of the concerns expressed by applicants. At the time that the first office action was prepared, however, the examiner was not actually aware of the disclosures contained in either Wengert or Goodman that relate to the presently claimed subject matter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (703) 308-1895. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Richard Bueker
Primary Examiner
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May 15, 2002